

The DPI 620 CE with WiFi*

Advanced Modular Calibrator and HART Communicator

A wireless IEEE 802.11g enabled Multifunction Electrical Calibrator and HART Communicator

(*Not available with the IS version)

The DPI 620 CE version can be further enhance with wireless IEEE 802.11g communications. For the first time, in a calibrator of this type, it is possible to link to the Internet and remote networks in order to access information and to transfer data. This powerful feature will benefit service technicians who spend extended periods away from head office and for those who need instant access to data, safety information, system drawings, product datasheets etc., while on the move. It will also provide an interface to future system modules when a physical connection is a hindrance.

Technical Specifications

DPI 620/CE General Specifications

Display	Size: 110 mm (4.3 in) diagonal; 480 x 272 pixels LCD: Colour display with touch-screen
Languages	English {Default}, Chinese, French, German, Italian, Portuguese, Russian, Spanish
Operating temperature	-10° to 50°C (14° to 122°F)
Storage temperature	-20° to 70°C (-4° to 158°F)
Ingress Protection	IP65 (Dust-tight, jets of water)
Humidity	0 to 90% RH Non condensing
Shock / Vibration	BS EN 61010:2001; Def Stan 66-31, 8.4 cat III, 1 m Drop Tested
EMC	Electromagnetic compatibility: BS EN 61326-1:2006
Electrical safety	Electrical – BS EN 61010 : 2001
Pressure safety	Pressure Equipment Directive - Class: Sound Engineering Practice (SEP)
Approved	CE Marked
Size (L: W: H)	DPI 620 only: 183 x 114 x 42 mm (7.2 x 4.5 x 1.7 in) + MC 620: ≈ 265 x 114 x 64 mm (10.4 x 4.5 x 2.5 in) + PM 620: ≈ 265 x 114 x 93 mm (10.4 x 4.5 x 3.7 in)
Weight	DPI 620 only: ≈ 575 g (1.3 lb) – battery included. MC 620 only: ≈ 640 g (1.4 lb). PM 620 only: ≈ 100 g (0.2 lb).
Power supply	Lithium-Polymer battery (GE Part number : IO620-Battery); Capacity: 5040 mAh (minimum), 5280 mAh (typical); Nominal voltage: 3.7 V. Charge temperature: 0° to 40°C (32° to 104°F) Discharge temperature: -20° to 60°C (-4° to 140°F). Note: For best battery performance, keep the temperature less than 60°C (140°F). Charge/discharge cycles: > 500 > 70% capacity.
Duration	Measure functions (CH1): ≈ 12 hours continuous. Dual Function, mA measure (CH2): ≈ 7 hours (24 V Source at 12 mA)

DPI 620 IS and DPI 620 IS CE Calibrator General Specifications

Display	Size: 110 mm (4.3 in) diagonal; 480 x 272 pixels OLED Colour display with touch-screen
Languages	English {Default}, Chinese, French, German, Italian, Portuguese, Russian, Spanish
Operating temperature	-10° to 40°C (14° to 104°F)
Storage temperature	-20° to 70°C (-4° to 158°F)
Ingress Protection	IP65 (Dust-tight, jets of water)
Humidity	0 to 90% RH Non condensing
Shock / Vibration	BS EN 61010:2001; Def Stan 66-31, 8.4 cat III, 1 m Drop Tested
EMC	Electromagnetic compatibility: BS EN 61326-1:2006
Electrical safety	Electrical – BS EN 61010 : 2001
Pressure safety	Pressure Equipment Directive - Class: Sound Engineering Practice (SEP)
Approved	CE Marked
Size (L: W: H)	DPI 620 only: 183 x 114 x 55 mm (7.2 x 4.5 x 2.2 in) + MC 620: ≈ 265 x 114 x 77 mm (10.4 x 4.5 x 3 in) + PM 620: ≈ 265 x 114 x 93 mm (10.4 x 4.5 x 3.7 in)
Weight	DPI 620 only: ≈ 1.1 kg (2.4 lb) – battery included. MC 620 only: ≈ 800 g (1.8 lb). PM 620 only: ≈ 100 g (0.2 lb).
Power supply	NiMH battery (GE Part number: IO620IS-Battery); Capacity: 4000 mAh (typical); Nominal voltage: 3.6 V. Charge temperature: 0° to 40°C (32° to 104°F) Discharge temperature: -10° to 40°C (-14° to 104°F). Note: For best battery performance, keep the temperature less than 60°C (140°F). Charge/discharge cycles: > 500 > 70% capacity.
Duration	Measure functions (CH1): ≈ 8 hours continuous. Dual Function, mA measure (CH2): ≈ 7 hours (24 V Source at 12 mA)
Approval	Baseefa10ATEX0010X IECEx BAS 10.0002X Ex II 1 G Ex ia IIC T4 Ga (-10°C ≤ Ta ≤ +40°C)
EN60079-0:2009	Electrical apparatus for Potentially Explosive Atmospheres – General Requirements. (Harmonized) (IEC 60079-0:2007 Edition 5)
EN60079-11:2007	Electrical apparatus for Potentially Explosive Atmospheres – Intrinsic Safety 'i'. (Harmonized) (IEC 60079-11:2006 Ed 5)



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Fir Tree Lane
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England
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Baseefa10ATEX0012X
IECEX BAS 10.0002X
IECEX BAS 10.0004X

DPI 620-IS

Advanced Modular Calibrator

Safety and quick reference guide

K0461

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Amendment Record

Iss No	Date	C/N No	Originator	Typed	Workflow No.	Amendments
1	18/06/10	N/A	Robert Lee	Robert Lee	147821	New document

Approvals

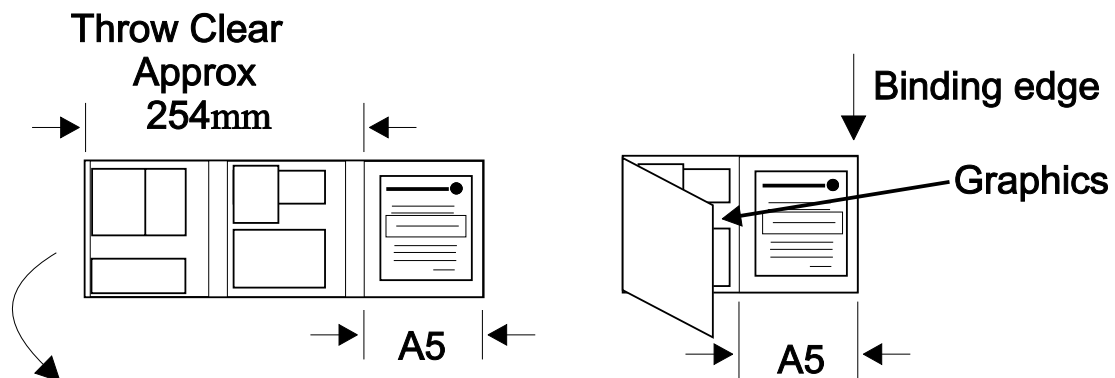
Engineering G DOCHERTY		
Marketing M SHELTON	Technical Communications R LEE	

Print Instructions: K0461, Issue 1

- | | |
|-----------------------|---|
| 1) Print Instructions | DO NOT PRINT |
| 2) Front + Back Cover | 1 leaf (2 pages) – printed both sides and fold |
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Druck DPI 620-IS

advanced modular calibrator

safety and quick reference guide - K0461



A1.1 DPI 620-IS: Channel 1 (CH1)

Measure (M) / Source (S) / Power (P)	
a	±30 V (M)
b	0 to 12 V (S)
c	±2000 mV (M) 0 to 2000 mV (S)
d	0 to 4000 Ω (M/S)
e	50 kHz (M/S)
f	Switch (M)
g	±55 mA (M)
h	0 to 24 mA (S)
i	11 RTDs (M/S)
j	12 TCs (M/S)

Figure C1
Note: = See figure or table.

Figure C2

Figure C3 (2, 3, 4-wire)

Figure C4

A1.2 DPI 620-IS: Channel 2 (CH2)

k	±30 V (M)
l	±2000 mV (M)
m	±55 mA (M)
n	0 to 24 mA (S)
o	24 V loop (P)
p	Switch (M)

Figure D1

A1.3 DPI 620-IS + MC 620-IS + PM 620-IS

Pressure* (M)	Figure E1
Gauge: 25 mbar to 200 bar (0.36 to 3000 psi) Absolute: 350 mbar to 1000 bar (5 to 15000 psi) Note: Maximum pneumatic pressure: 500 bar (7250 psi)	

*** Caution:** To prevent damage to the PM 620-IS module, only use it within the specified pressure limit on the label.

<p>A2.1</p>	<p>A2.2</p>
<p>A3</p>	<p>B1</p>
<p>B2</p>	<p>DPI 620-IS + MC 620-IS + PM 620-IS</p>
<p>C1</p>	<p>C2</p>
<p>C3</p>	<p>C4</p>
<p>D1</p>	<p>E1</p>



Intrinsically Safe Advanced Module Calibrator

Introduction

These instructions detail the requirements for using the DPI 620-IS, MC 620-IS and PM 620-IS Intrinsically Safe Advanced Modular Calibrator in a hazardous area. Read the whole publication before starting.

DPI 620-IS

Marking Details

Baseefa10ATEX0010X.....	ATEX Certificate number
 II 1 G	Equipment group & category
Ex ia IIC T4 Ga (-10°C ≤ Ta ≤ +40°C)	Hazardous location markings
IECEx BAS 10.0002X	IECEx Certificate number
 1180	CE Mark
DPI 620-IS	Specific apparatus type
Druck LTD. Groby, LE6 0FH, UK.....	Manufacturer's name and address
SN *****	Serial number
DoM: MMM YYYY	Date of manufacture, Month and Year.

Requirements and Conditions

Batteries

Use only Druck battery pack, part number IO620IS-BATTERY.

Special Conditions for Safe Use

- The rechargeable battery pack must be removed from the DPI 620-IS Advanced Modular Calibrator for recharging in the safe area, but may be replaced within a DPI 620-IS Advanced Modular Calibrator within a hazardous area.
- The lower ambient temperature is limited to -10°C.
- When MC 620-IS Dual Transducer Carrier is used with the DPI 620-IS Advanced Modular Calibrator both positions for the transducers must be occupied with either pressure transducers or a dummy pressure transducer before connecting to the DPI 620-IS Advanced Modular Calibrator.

IECEx Approvals

For the IECEx certificate (IECEx BAS 10.0002X), visit the IECEx website at:

www.iecex.com

Note:

The MC 620-IS Pressure Module Carrier has ATEX and IECEx approval that is "Part of" the DPI 620-IS approvals.

Electrical Parameters

Channel 1 Voltage Terminals

$U_i = 30V$	$P_o = 103mW$
$I_i = 100mA$	$L_i = 108\mu H$
$P_i = 1W$	$C_i = 16.5nF$
$U_o = 18.9V$	$L_o = 1.39mH$
$I_o = 47mA$	$C_o = 16.5nF$

Channel 1 Current Terminals

$U_i = 30V$	$P_o = 22mW$
$I_i = 100mA$	$L_i = 108\mu H$
$P_i = 1W$	$C_i = 16.5nF$
$U_o = 6.51V$	$L_o = 1.39mH$
$I_o = 14mA$	

Channel 2 Passive Mode - No connection to 24V Loop Terminal Voltage Terminals

$U_i = 30V$	$P_o = 25mW$
$I_i = 100mA$	$L_i = 100\mu H$
$P_i = 1W$	$C_i = 20.6nF$
$U_o = 6.51V$	$L_o = 1.4mH$
$I_o = 16mA$	$C_o = 12.4nF$

Channel 2 Loop Power Mode - Connection Utilizing 24V Loop Terminal

$U_i = 0V$	$P_o = 786mW$
$I_i = 0mA$	$L_i = 100\mu H$
$P_i = 0W$	$C_i = 20.6nF$
$U_o = 25.2V$	$L_o = 1.4mH$
$I_o = 124mA$	$C_o = 12.4nF$

DPI 620-IS Advanced Modular Calibrator external connections for PV 620-IS Series Pressure Station or MC 620-IS Dual Transducer Carrier

$U_i = 0$	$C_o = 3.23\mu F$	$P_i = 0$	$L_i = 0$
$U_o = 7.88V$	$I_i = 0$	$P_o = 0.70W$	$L_o = 150\mu H$
$C_i = 1.17\mu F$	$I_o = 354mA$		

PM 620-IS

Marking Details

Baseefa10ATEX0012X

ATEX Certificate number



II 1 G

Equipment group & category

Ex ia IIC T4 Ga (-10°C ≤ Ta ≤ +50°C)

Hazardous location markings

IECEX BAS 10.0004X

IECEX Certificate number



CE Mark

PM 620-IS

Specific apparatus type

Druck LTD. Groby, LE6 0FH, UK

Manufacturer's name and address

SN *****

Serial number

DoM: MMM YYYY

Date of manufacture, Month and Year.

Requirements and Conditions

Special Conditions for Safe Use

- The lower ambient temperature is limited to -10°C .
- The input parameters are shown for a single PM 620-IS Pressure Module connected to a suitable intrinsically safe source. When two PM 620-IS Pressure Modules (each having an equivalent capacitance of $C_i = 1.27\mu\text{F}$) are fitted, within a MC 620-IS Dual Transducer Carrier and connected to the DPI 620 IS Advanced Modular Calibrator, the PM 620-IS Pressure Modules appear in parallel across the supply of $U_o = 7.88\text{V}$ which has an equivalent capacitance of $C_i = 1.17\mu\text{F}$, the combination is acceptable at this lower voltage of 7.88V and has a factor of safety of 1.5 for Group IIC.
- The outer enclosure of the PM 620-IS Pressure Modules may contain light metals in the form of titanium. Therefore, the apparatus must be installed in such a manner as to prevent the possibility of it being subjected to impacts or abrasion. If a PM 620-IS Pressure Module is transported separately in a hazardous area the threaded pressure connection must be provided with protection from mechanical impacts or friction.

IECEx Approvals

For the IECEx certificate (IECEx BAS 10.0004X), visit the IECEx website at:

www.iecex.com

Electrical Parameters

$$U_i = 12.3\text{V} \quad C_i = 1.27\mu\text{F}$$

$$I_i = 1.0\text{A} \quad L_i = 0$$

$$P_i = 0.75\text{W}$$

Installation

WARNING

- **Do not use tools on the instrument that might cause incendive sparks - this can cause an explosion.**
- Provide additional protection for equipment that may be damaged in service.
- Installation should be carried out by qualified plant installation technicians in compliance with the latest issue of EN 60079-14.

Declaration Requirements

The DPI 620-IS, MC 620-IS and PM 620-IS are designed and manufactured to meet the essential health and safety requirements not covered by the EC Type Examination Certificate Baseefa10ATEX0010X for the DPI 620-IS and by the EC Type Examination Certificate Baseefa10ATEX0012X for the PM 620-IS when installed as detailed above.

The intrinsically safe instrument is designed and manufactured to protect against other hazards as defined in paragraph 1.2.7 of Annex II of the ATEX Directive 94/9/EC.

Quick Reference

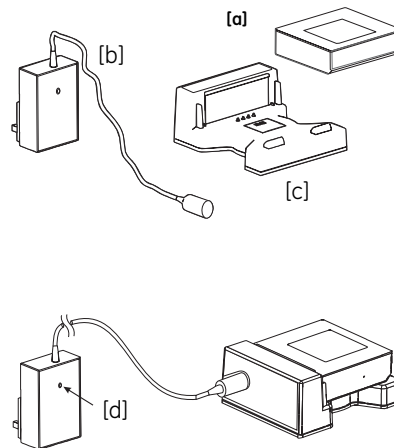
WARNING: Before using this instrument, read and understand the “Safety” section. It is dangerous to ignore the specified warnings.

Start operations (S1 to S4)

S1: Install the battery. Refer to Section 5.

The battery pack **[a]** (part number: IO620IS – Battery) will be partly charged, it is recommended to fully charge the battery pack before using the instrument:

- Connect the charger **[b]** (part number: IO620IS-Charger) to a power supply.
- Connect the charger to the cradle **[c]** (part number: IO620IS-Cradle).
- Correctly insert the battery into the cradle (making sure the battery pack label faces upwards).
- The battery charger LED **[d]** indicates the different charge states. When the LED shows green the battery pack is fully charged and ready to use. The battery pack takes approximately 8 hours to fully charge.

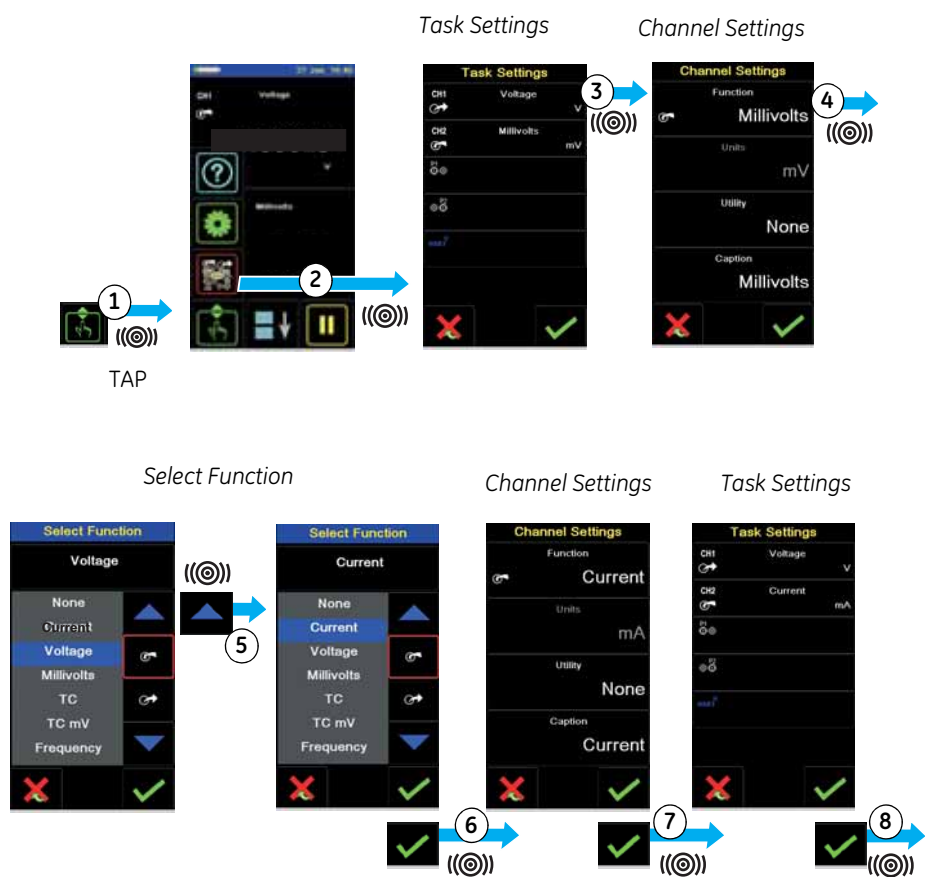


S2: Power on/off sequence.

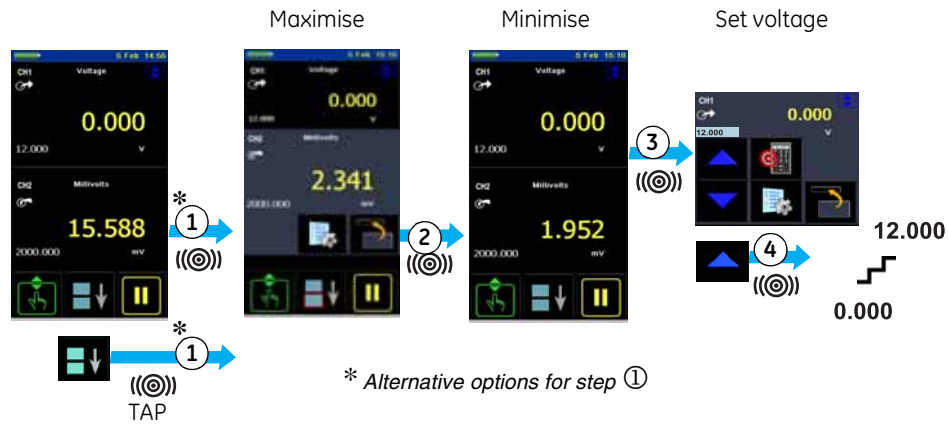


Note: The instrument can also be put in stand-by mode (deep sleep mode). Stand-by mode can only be initiated when the instrument is ON (i.e. normal output). Press and hold of the ON key for 1 sec to go into stand-by mode. To turn the instrument ON press the ON key for 1 sec. The instrument will return to the last mode that it was configured. It is not recommended to keep the instrument in stand-by for long periods of time (100hrs max) to preserve battery capacity.

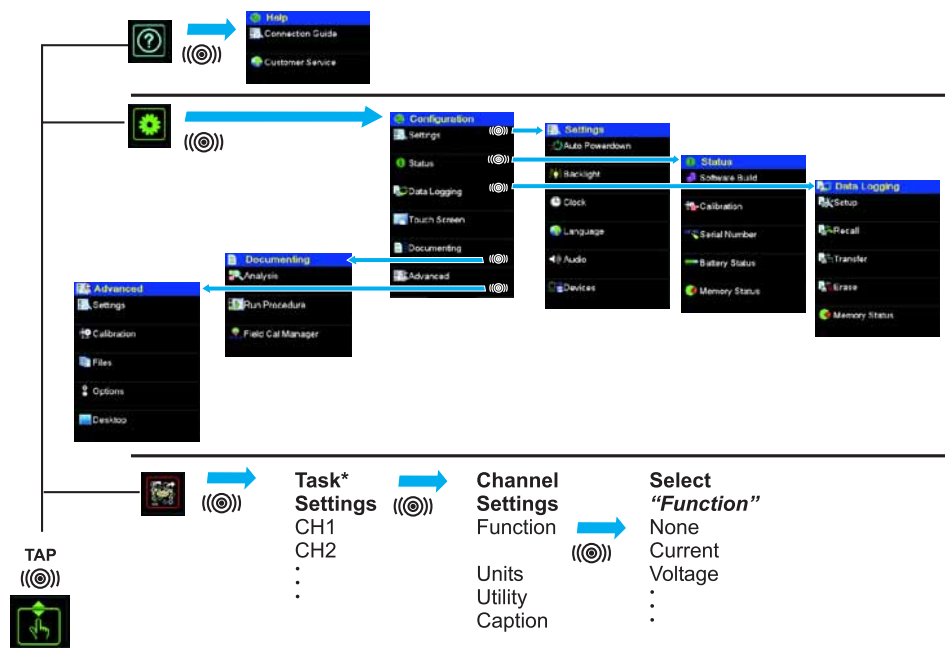
S3: Example change of function (Voltage to Current)



S4: Touch-screen operations (maximise, minimise, set voltage)



Menu sequence



* A channel can only have one function at a time.

1 Overview

The intrinsically safe, advanced modular calibrator (AMC) is part of a set of hand-held modules that can be quickly put together to include a wide range of calibrator functions.

DPI 620-IS



Advanced modular calibrator, DPI 620-IS: This is a battery-powered instrument for electrical measure and source operations and HART® communications; see table A1 (front cover). It also supplies the power and user interface functions for all the add-on modules. Use the touch-screen to display up to six different parameters.

MC 620-IS



Pressure module carrier, MC 620-IS: *Optional item.* This attaches to the DPI 620-IS calibrator to make a fully integrated pressure indicator instrument. To measure and display pneumatic or hydraulic pressures, up to two interchangeable pressure modules can be used at a time. *When not in use fit blanking device (part number 191-369).*

PM620-IS



Pressure modules, PM 620-IS: *Optional item.* These modules attach to the pressure module carrier (MC 620-IS) or to a pressure station (PV 62x-IS) to give the DPI 620-IS calibrator the necessary pressure measurement functionality. They are fully interchangeable “plug and play” modules with no initial set-up or user calibration.

PV 62x-IS



Pressure stations, PV 62x-IS: *Optional item.* To make a fully integrated pressure calibrator, attach the DPI 620-IS calibrator to one of the three pressure stations. Refer to user manual - K0460.

2 Standard equipment

These items are part of the standard equipment with the DPI 620-IS calibrator:

- DC power supply/battery charger unit
- NiMH battery
- Set of six electrical test leads
- Safety and quick reference guide
- CD with the user manual
- DPI 620-IS *CE version only*: Plastic stylus (to tap small icons on the screen)

3 Safety

Before using the instrument, read and understand all the related data. This includes: the applicable local safety procedures, the user manual (K0460), and the instructions for the applicable accessories/options/equipment.

Operators must be suitably qualified to use this intrinsically safe equipment and comply with the conditions stated by the certifying authorities.

To prevent an explosion or fire, only use the GE specified battery (IO620IS-battery), battery cradle (IO620IS-cradle) and battery charger (IO620IS-charger).

General warnings

WARNING

- It is dangerous to ignore the specified limits for the instrument or its related accessories. Do not use the instrument or accessory if it is not in its normal condition. Use the applicable protection and obey all safety precautions.
- Do not use the instrument in locations with explosive gas, vapour or dust. There is a risk of an explosion.

Electrical warnings

-
- To prevent electrical shocks or damage to the instrument, do not connect more than 30V between the terminals, or between the terminals and the ground (earth).
 - This instrument uses a Ni-MH (Nickel-Metal Hydride) battery pack. To prevent an explosion or fire, do not short circuit, do not disassemble, keep it safe from damage. For operating conditions, see Table 1.
 - To prevent an explosion or fire, only use the GE specified battery and battery charger.
 - To prevent battery leakage or heat generation, only use the battery charger in the temperature range 0 to 40°C (32 to 104°F). For operating conditions, see Table 1.
 - To make sure the display shows the correct data, disconnect the test leads before setting the power to on or change to another measure or source function.

Pressure warnings

These warnings are applicable when using a pressure option with the DPI 620-IS calibrator :









- Some liquid and gas mixtures are dangerous. This includes mixtures that occur because of contamination. Make sure that the equipment is safe to use with the necessary media.
- Pressurised gases and fluids are dangerous. Before attaching or disconnecting pressure equipment, safely release all the pressure.
- To prevent a dangerous release of pressure, make sure that all the related pipes, hoses and equipment have the correct pressure rating, are safe to use and are correctly attached.

Cautions

To prevent damage to the display, do not use sharp objects on the touch-screen.

To prevent damage to the PM 620-IS module, only use it within the specified pressure limit on the label.






Marks and symbols on the instrument

	Complies with European Union directives		Warning - refer to the manual
	Read the manual		USB port: Mini-type B connector
	Ground (Earth)		ON/OFF
	Do not dispose of this product as household waste. Refer to "Maintenance" (Section 5.5).		
	Do not dispose of the battery as household waste. Refer to "Maintenance" (Section 5.5).		
More marks and symbols are specified in the user manual (K0460 - Druck DPI 620-IS Advanced Modular Calibrator)			

4 Parts

Refer to the figures on the front cover (A2, B1).

4.1 Key to figure A2 (DPI 620-IS calibrator)

A2	1.		On or off button. Stand-by button. Refer to "Quick Reference".
	2.	CH1	Channel 1 connectors for: voltage (V); frequency (Hz); resistance (Ω); resistance temperature detectors (RTD): 3W, 4W = 3-wire, 4-wire RTD input; switch operation; current (mA+, mA-); COM = Common connector
	3.	TC	Channel 1 connectors for thermocouples.
	4.	CH2	Isolated channel 2 connector for: 24V loop power supply (24V _o).
	5.	CH2	Isolated channel 2 connectors for: voltage (V); current (mA+, mA-); switch operation.
A2	6.		USB mini-type B connector for communication with a computer.
	7.		Liquid crystal display (LCD): Colour display with touch-screen. To make a selection, lightly tap on the applicable display area. a. Battery indicator b. Date and time
	8.		CH1: Window for the channel 1 settings and values. c. Measure or source indication d. Function e. Full scale (FS) range f. Function units
	9.		Other windows: The number of windows you see on the display is set by the number of task selections and external modules you are working with (maximum: 6).
	10.		Tap this button to set up the Task, set up the instrument (Configure) and to access Help (?). Refer to "Quick Reference".
			Tap this button to maximise each of the available windows in sequence. Refer to "Quick Reference".
			Pause () or Play (▶): Tap () to hold (freeze) all the data on the display. To release the display and continue, tap (▶).

4.2 Key to figure B1 (MC 620-IS module carrier/PM620-IS module) - Optional item

B1	1.	Pressure connection (G1/8 or 1/8 NPT) to attach external pressure equipment.
	2.	Pressure and electrical connections for a pressure module (PM620-IS). These are self-seal pressure connections.
	3.	Two screws to attach the calibrator (DPI 620-IS).
	4.	Electrical connections for the calibrator (DPI 620-IS).
	5.	Pressure module (PM 620) with a pressure connection, reference port (a) and a label. The label includes: <i>Pressure range.</i> Example: 20 bar g (g: gauge; a: absolute); <i>serial number (S/N); manufacturer:</i> name, address, website

5 Installation


Before starting:

- Read and understand the "Safety" section.
- Do not use damaged equipment.

Note: Use only original parts supplied by the manufacturer.

5.1 AMC battery

See figure A3 (front cover).

A3	Step	Procedure
	1.	When the power is off, unscrew the five screws (a) and remove the cover (b).
		Turn the instrument over and collect the discharged battery. Do not prise the battery out of the instrument case. Damage may occur to the electrical gold spring pin contacts as a result.
	2.	The battery can only be inserted in one orientation. The new battery should be inserted with the label showing on the top face. The chamfered edge should be face down and to the rear of the pack. Do not force the battery into the case. Damage may occur to the electrical gold spring pin contacts as a result.
	3.	Re-fit the cover (b) and secure with the five screws (a) .

5.2 Indicator assembly

Optional item (MC 620-IS/PM620-IS). See figure B2 (front cover).

B2	Step	Procedure
	1.	Align the two slots (a) on the calibrator with the two posts (b) on the module carrier.
	2.	When the posts are fully engaged in the slots, tighten the two screws until they are hand-tight.
	3.	Attach one or two PM620-IS modules with the correct range and type.
	4.	Tighten each one until it is hand-tight only.

5.3 Electrical connections

See figure C1 to C4, and D1 (front cover).

5.4 External pressure connections

See figure B1/E1 (front cover). Use an applicable method to seal the external pressure connections, and then tighten to the applicable torque.

5.5 Maintenance

Clean the case with a moist, lint-free cloth and a weak detergent. Do not use solvents or abrasive materials.

Return the instrument to the manufacturer or an approved service agent for all repairs. Refer to the user manual.

European Union directives

Do not dispose of this product or its battery as household waste. Use an approved organisation that collects and/or recycles waste electrical and electronic equipment, and/or used batteries. This will help keep to a minimum the effect these items have on the environment and on human health. For more information, contact one of these:

- our customer service department:
(Contact us at www.gesensinginspection.com)
- the local government office.

6 Specification

Table 1: General specification

Display	OLED: 480 x 272 pixels with touch-screen.
Operating temperature	-10 to 40°C (14 to 104°F).
Storage temperature	-20 to 70°C (-4 to 158°F).
Ingress Protection	IP65 (DPI 620-IS calibrator only).
Humidity	0 to 90% relative humidity (RH) non-condensing.
Shock/Vibration	Def Stan 66-31, 8.4 cat III.
EMC	Electromagnetic compatibility: BS EN 61326-1:2006.
Electrical safety	Electrical - BS EN 61010:2001.
Pressure safety	Pressure Equipment Directive - Class: Sound Engineering Practice (SEP).
Approved	CE Marked.
Battery power	Ni-MH battery (GE Part number: IO620IS-BATTERY). Capacity: 4000 mAh (typical); Nominal voltage: 3.6 V. Charge temperature: 40°C (104°F) maximum. Note: When the instrument senses the temperature is outside this range, it stops charging. Discharge temperature: -10 to 40°C (14 to 104°F). Charge/discharge cycles: > 500 > 70% capacity.

